CRITICAL HABITAT AREAS OF FENNER LAKE, ADAMS COUNTY, WISCONSIN JANUARY 2007

Submitted by Reesa Evans
Adams County Land & Water Conservation Department
P.O. Box 287, Friendship, WI 53934
608-339-4268

CRITICAL HABITAT DESIGNATION
For Fenner Lake, Adams County 2006

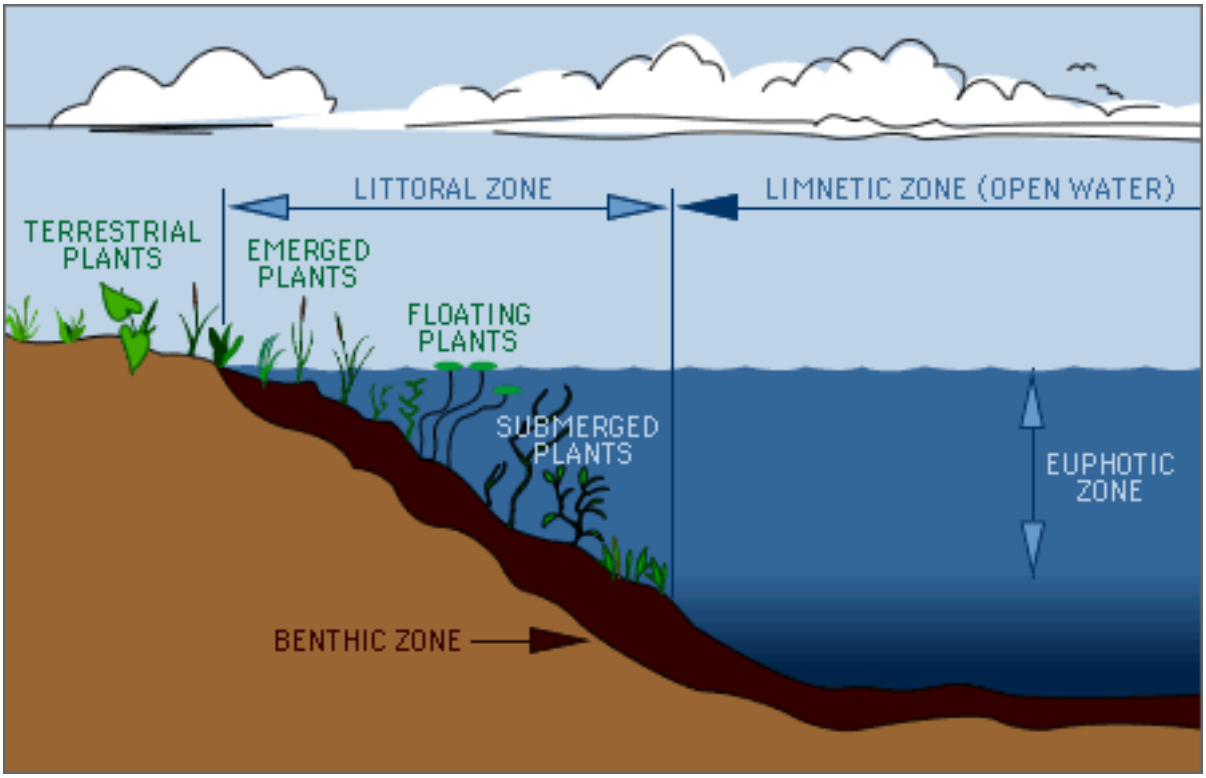
I. INTRODUCTION

Designation of critical habitat areas within lakes provides a holistic approach for assessing the ecosystem and for protecting those areas in and near a lake that are important for preserving the qualities of the lake. Wisconsin Rule 107.05(3)(i)(I) defines a "sensitive areas" as: "areas of aquatic vegetation identified by the department as offering critical or unique fish & wildlife habitat or offering water quality or erosion control benefits to the body of water. Thus, these sites are essential to support the wildlife and fish communities. They also provide mechanisms for protecting water quality within the lake, often containing high-quality plant beds. Finally, sensitive areas often can provide the peace, serenity and beauty that draw many people to lakes in the first place.

Protection of critical habitat areas must include protecting the shore area plant community, often by buffers of native vegetation that absorb or filter nutrient & stormwater runoff, prevent shore erosion, maintain water temperature and provide important native habitat. Buffers can serve not only as habitats themselves, but may also provide corridors for species moving along the shore.

Besides protecting the landward shore areas, preserving the littoral (shallow) zone and its plant communities not only provides essential habitat for fish, wildlife, and the invertebrates that feed on them, but also provides further erosion protection and water quality protection.

Critical habitat area designations provide information that can be used in developing a management plan for the lake that protects the lake's ecosystem by identifying areas in need of special protection. These areas usually contain several types of aquatic plants: emergent; free-floating; rooted floating-leaf; and submergent.



Field work for a critical habitat area study was performed on May 25, 2006, on Fenner Lake, Adams County. The study team included: Scot Ironside, DNR Fish Biologist;; Deborah Konkel, DNR Aquatic Plant Specialist; Patrick (Buzz) Sorge, DNR Lakes Manager, and Reesa Evans, Adams County Land & Water Conservation Department. Areas were identified visually, with GPS readings and digital photos providing additional information. Input was also received from Terry Kafka, DNR Water Regulation, and Jim Keir, DNR Wildlife Biologist.

Fenner Lake is a mesotrophic/oliogotrophic seepage lake with fair to very good water quality and very good clarity. It has 33 surface acres, with a maximum depth of 30 feet and an average depth of 5 feet. As in the case in all seepage lakes, the water level on Fenner Lake fluctuates naturally with the underground water table. The water level of Fenner Lake has been steadily dropping in the last few years. A study is currently underway to determine causes. Fenner Lake has been designated a no-motor lake for some years.

II. CRITICAL HABITAT AREA CRITERIA

All the critical habitat areas on Fenner Lake were selected because of their importance for fish and wildlife habitat, importance for protecting water quality, importance of the natural buffer of terrestrial vegetation, and importance of protecting the aquatic plant communities they supported. Each of these sites needs to be preserved in their current natural state and should not be further developed. All of the sites have potential to be used for educational purposes.

Common Attributes of All the Critical Habitat Areas

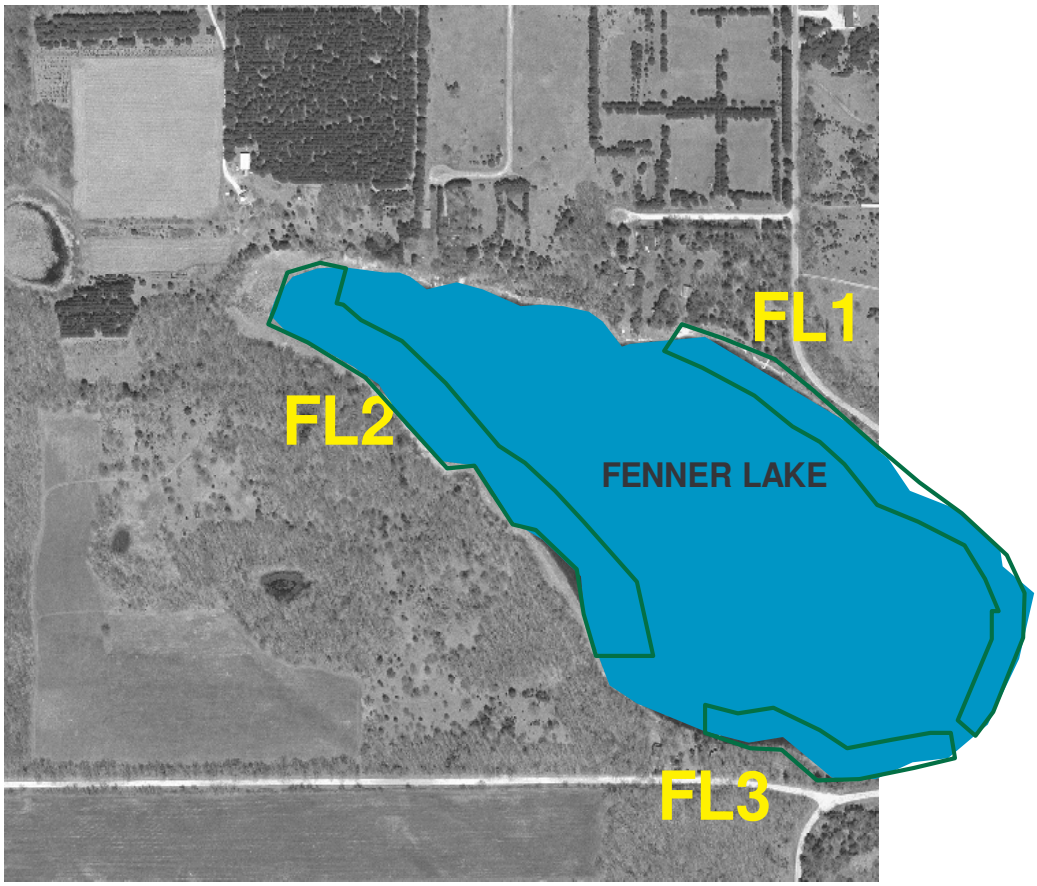
Water Quality: The vegetation at these sites (near shore and in the water) provide a nutrient buffer that reduces algal growth. Its service as a biological buffer reduces the opportunities for invasions by exotics. The physical buffer the vegetation gives protects against shore erosion and plant fragmentation, as well as stabilizes sediment, thus reducing nutrient recycling and likelihood of algal blooms. Many of these plant areas also provide microhabitat for fish and wildlife, as well as providing conditions that encourage higher biodiversity at the site. In the instance of a seepage lake like Fenner Lake, these areas may help protect the quality of the water entering the lake from groundwater seepage or springs.

Fish Habitat: All of these critical habitat areas provide important fish habitat and are the most essential areas in the lake for a healthy fish community. These areas provide space for spawning, nursery sites, feeding sites, and protective cover from predator fish. Eliminating even one of these sites would reduce the amount of fish habitat available, resulting in a reduction of the size and diversity of the fish community that Fenner Lake can support.

Wildlife Habitat: Shoreline, emergent and floating-leaf vegetation are primary habitat for many kinds of wildlife. Shore and emergent vegetation are especially important as nesting and brood-rearing areas. This vegetation also provides cover during migrations and provides travel corridors all throughout the year. Floating-leaf vegetation also provides cover. Most of this vegetation is also used by various fish and other wildlife for food.

A map of the designated critical habitat areas on Fenner Lake is seen on the next page.

Critical Habitat Areas--Fenner Lake



RE:6/06

Critical Habitat Area FE1

This area extends along approximately 1500 feet of the northeast shoreline, up to the ordinary high water mark and, where there are wetlands, landward of the lake through the wetlands. Sediment includes peat, sand, silt and mixtures thereof. 12.5% of the shore is wooded; 17.5% has shrubs; 47.5% is native herbaceous cover. The balance of the shore in this area includes a small area of cultivated lawn and pavement. Large woody cover is present for habitat. With human disturbance along this shoreline, the area has some natural scenic beauty, although a paved road runs near the area.

Northeast Part of FE1

Filamentous algae were abundant at this site.

This area of large woody cover, emergent aquatic vegetation, submergent and floating vegetation provides spawning and nursery areas for many types of fish: northern pike; largemouth bass; bluegill; pumpkinseed; yellow perch; crappie; bullhead; suckers, and other panfish. All of these fish also feed and take cover in these areas. No exotic aquatic wildlife was noted in this area, i.e, no carp, smelt or rusty crayfish were seen.

Songbirds were heard during the field survey. Frogs and salamanders are known to use this area for shelter/cover, nesting and feeding. Turtles and snakes also use this area for cover or shelter in this area, as well as nested and fed in this area.

Maximum rooting depth of aquatic vegetation in CR1 was 15 feet. Several types of aquatic plants were found in this critical habitat area: emergents; floating-leaf plants; and submergent plants. Emergents found were *Carex* (Sedge); Glyceria (Mannagrass); *Calamagrostis* (Canada Bluejoint Grass); *Eleocharis* (Spikerush); *Juncus* (Rush); *Rumex* (Waterdock); and *Scirpus* (Bulrush). Emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife.

Floating-leaf plants included *Nymphaea odorata* (White Water Lily); *Nuphar variegata* (Yellow Pond Lily) and *Polygonum amphibium* (Water Smartweed). Floating-leaf vegetation provides cover and dampens waves, protecting the shore. Submergents at this site included *Chara* spp (Muskgrass); *Myriophyllum heterophyllum* (Variable Milfoil); *Myriophyllum sibiricum* (Northern Milfoil); *Najas flexilis* (Bushy Pondweed); *Najas guadalupensis* (Southern Naiad); *Potamgeton crispus* (Curly-Leaf Pondweed); *Potamogeton gramineus* (Grass-Leaf Pondweed); *Potamogeton illinoensis* (Illinois Pondweed); *Potamgeton natans* (Floating-Leaf Pondweed); *Potamogeton pectinatus* (Sago Pondweed); *Potamogeton pusillus* (Small Pondweed); *Utricularia gibba* (Creeping Bladderwort); and *Utricularia vulgaris* (Large Bladderwort). Such a diverse submergent community provides many benefits.

One exotic invasive plant was found in this area, Curly-Leaf Pondweed. *Myriophyllum spicatum* (Eurasian Watermilfoil) was found in Fenner Lake in 2005. During 2006, the area where it was found in 2005 was exposed to the air due to lowering of the lake level, so none was found in 2006. Most of the aquatic vegetation in this area has multiple uses for fish and wildlife (see Table 1).

Table 1: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Carex spp		F	F,I				
Chara	F,S	F,I,C					
Eleocharis spp	F,I,C,S	F,I,C	F,C	F,C	F	F	
Glyceria spp	S	F,I,C			F		F
Juncus spp	F,I,C,S	F,I,C	F,C				
Myriophyllum spp	F,I,C,S	F,I	F		F		
Najas spp	F,C,I	F	F	F	F		
Nuphar variegataa	F,I,C,S	F	F		F	F	F
Nymphaea odoratoa	F,I,C,S	F	F		F	F	

Polygonum amphibium	C,I	F,I	F,I	F,I	F		F
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Scirpus spp	F,C,I	F,C	F,C,N	F	F	F	F
Utricularia spp	F,I,C,S						

F = Food; I = Shelters Invertebrates; C = Cover; S = Spawning; N = Nesting

West End of FE1

RECOMMENDATIONS FOR AREA FE1

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove fallen trees along the shoreline.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain snag/cavity trees for nesting.
(6) Install nest boxes.
(7) Maintain or increase wildlife corridor.
(8) Protect emergent vegetation.
(9) Minimize aquatic plant and shore plant removal to maximum 30' wide viewing/access corridor. Leave as much vegetation as possible to protect water quality and habitat.
(10) Seasonal control of Curly-Leaf Pondweed and, if necessary, Eurasian Watermilfoil, using control methods selective for exotics.

(11) Use best management practices.
(12) No use of lawn products.
(13) No bank grading or grading of adjacent land.
(14) No pier placement, boat landings, development or other shoreline disturbance in the shore area of the wetland corridor.
(15) No pier construction or other activity except by permit using a case-by-case evaluation.
(16) No installation of pea gravel or sand blankets.
(17) No bank restoration unless the erosion index scores moderate or high.
(18) If the erosion index does score moderate or high, bank restoration only using biologs or similar bioengineering, with no use of riprap or retaining walls.
(19) Placement of swimming rafts or other recreational floating devices only by permit.
(20) Maintain buffer of shoreline vegetation.
(21) Maintain aquatic vegetation in undisturbed condition for wildlife habitat, fish use and water quality protection.
(22) Post exotic species warning at boat landing.
(23) Maintain no-motor lake designation.

Critical Habitat Area FE2

This area extends along approximately 2500 feet along the southwest shoreline. Sediment includes muck, peat, sand, silt and mixtures thereof. 22.5% of the shore is wooded; 7.5% has shrubs; and 61.25% is native herbaceous cover. The remaining shore in this area is cultivated lawn and hard structure. Large woody cover is present. With minimal human disturbance along this shore, the area is has natural scenic beauty.

Photos of Area FE2

This area of large woody cover, emergent aquatic vegetation, submergent and floating vegetation provides spawning and nursery areas for many types of fish: northern pike; largemouth bass; bluegill; pumpkinseed; yellow perch; crappie; bullhead; suckers, and other panfish. All of these fish also feed and take cover in these areas. No exotic aquatic wildlife was noted in this area, i.e, no carp, smelt or rusty crayfish were seen. No development was present in FE2 near the shore; houses were set back up a steep slope.

Seen during the field survey were various types of waterfowl and songbirds. Frogs and salamanders are known to use this area for shelter/cover, nesting and feeding. Turtles and snakes also use this area for cover or shelter in this area, as well as nested and fed in this area. Upland wildlife feed and nest here as well. Since human disturbance is relatively light in FE2, it provides high-quality habitat for many types of wildlife.

Maximum rooting depth in FE2 was 15 feet. No threatened or endangered species were found in this area. Filamentous algae were not common in this area. Emergent plants found at the site included *Calamagrostis, Carex, Eleocharis, Rumex, Sagittaria* and *Scirpus.* Such plants provide spawning, habitat and food areas for fish and invertebrates, as well as nesting areas for birds.

Three floating-leaf rooted plants were present in this area: *Nuphar variegata, Nymphaea odorata,* and *Polygonum amphibium.* Floating-leaf vegetation provides cover and dampens waves, protecting the shore. The remaining thirteen were submergent: *Ceratophyllum demersum, Chara* spp., *Elodea canadensis, Myriophyllum heterophyllum*, *Myriophyllum sibiricum, Najas guadalupensis, Potamogeton amplifolius, Potamogeton gramineus*, *Potamogeton natans, Potamogeton pectinatus, Potamgeton pusillus, Potamogeton zosteriformis,* and *Utricularia gibba.* Such a diverse submergent community provides many benefits.

Most of these plants are used by wildlife and fish for multiple purposes (see Table 2). Because this site provides all three structural types of vegetation, the community has a diversity of structure and species that supports even more diversity of fish and wildlife.

Table 2: Aquatic Plant Benefits

Table 2: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Carex spp		F	F,I				
Chara	F,S	F,I,C					
Eleocharis spp	F,I,C,S	F,I,C	F,C	F,C	F	F	
Glyceria spp	S	F,I,C			F		F
Juncus spp	F,I,C,S	F,I,C	F,C				
Myriophyllum spp	F,I,C,S	F,I	F		F		
Najas spp	F,C,I	F	F	F	F		
Nuphar variegataa	F,I,C,S	F	F		F	F	F
Nymphaea odoratoa	F,I,C,S	F	F		F	F	
Polygonum amphibium	C,I	F,I	F,I	F,I	F		F
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Scirpus spp	F,C,I	F,C	F,C,N	F	F	F	F
Utricularia spp	F,I,C,S						

F = Food; I = Shelters Invertebrates; C = Cover; S = Spawning; N = Nesting

RECOMMENDATIONS FOR FE2

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove fallen trees along the shoreline nor logs in the water.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain snag/cavity trees for nesting.
(6) Maintain or increase wildlife corridor.
(7) Install nest boxes.
(8) Protect emergent vegetation for habitat and shoreline protection.
(9) Removal of submergent vegetation for navigation purposes only.
(10) Seasonal control of Curly-Leaf Pondweed and, if necessary, of Eurasian Watermilfoil, using methods specific for control of exotics.
(11) Minimize aquatic plant and shore plant removal to maximum 30' wide access/viewing corridor. Leave as much vegetation as possible to protect water quality and habitat.
(12) Use forestry best management practices.
(13) Consider purchase of conservation easement to prevent future development of this area.
(14) No use of lawn products.
(15) No bank grading or grading of adjacent land.

(16) No pier construction or other activity except by permit using a case-by-case evaluation.
(17) No installation of pea gravel or sand blankets.
(18) No bank restoration unless the erosion index scores moderate or high.
(19) If the erosion index does score moderate or high, bank restoration only using biologs or similar bioengineering, with no use of riprap or retaining walls, and must include a stormwater management component.
(20) Placement of swimming rafts or other recreational floating devices only by permit.
(21) Maintain buffer of shoreline vegetation.
(22) Maintain aquatic vegetation buffer in undisturbed condition for wildlife habitat, fish use and water quality protection.
(23) Post landing with exotic species alert and educational signs to prevent introduction and/or spread of exotic species.
(24) Maintain no-motor designation of lake.

CRITICAL HABITAT AREA FE3

This area extends along approximately 450 feet of the southeast shoreline. Sediment includes gravel, peat, sand, and mixtures thereof. 32.5% of the shore is wooded; 12.5% has shrubs; 32.5% is native herbaceous cover—the remaining is bare sand. Large woody cover is common. Scenic beauty in part of the area is lessened due to the human development, especially the proximity of the sand boat ramp area.

This area does provide spawning and nursery areas for many types of fish: northern pike; largemouth bass; bluegill; pumpkinseed; yellow perch; crappie; bullhead; suckers, and other panfish. All of these fish also feed and take cover in these areas. No exotic aquatic wildlife was noted in this area, i.e, no carp, smelt or rusty crayfish were seen.

Seen during the field survey were various types of waterfowl and songbirds. Frogs are known to use this area for shelter/cover, nesting and feeding. Turtles were seen in this area for cover or shelter in this area.

Maximum rooting depth in CR3 was 14.5 feet. No threatened or endangered species were found in this area. One exotic invasive, *Myriophyllum spicatum* (Eurasian watermilfoil), was found in this area in 2005. During 2006, the area where it was found in 2005 was exposed to the air due to lowering of the lake level, so none was found in 2006. Filamentous algae were present here, especially near the shores. This area had fewer varieties of emergent plants than did the other two critical habitat areas on Fenner Lake. Only *Calamagrostis,*

Sagittaria and *Scirpus* were present at this site. However, all emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife.

Two species were floating-leaf rooted plants: *Nuphar variegata* and *Nymphaea odorata*. Floating-leaf vegetation provides cover and dampens waves, protecting the shore. The remaining aquatic vegetation was submergent: *Ceratophyllum demersum, Elodea canadensis*, *Myriophyllum heterophyllum*, *Myriophyllum sibiricum, Najas flexilis, Potamogeton amplifolius*, *Potamgeton gramineus, Potamogeton natans* and *Potamogeton zosteriformis.* Such a submergent community provides many benefits.

Most of these plants are used by wildlife and fish for multiple purposes (see Table 3). Because this site provides all three structural types of vegetation, the community has a diversity of structure and species that supports even more diversity of fish and wildlife.

Table 3: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Ceratophyllum demersum	F,I,C,S	F,I,C					
Elodea canadensis	F,I,C	F,I			F,I		
Juncus spp	F,I,C,S	F,I,C	F,C				
Myriophyllum spp	F,I,C,S	F,I	F		F		
Najas spp	F,C,I	F	F	F	F		
Nuphar variegata	F,I,C,S	F	F		F	F	F
Nymphaea odoratoa	F,I,C,S	F	F		F	F	
Potamogeton spp	F,I,C.S	F,I	F,I		F	F	F
Sagittaria spp	F,I,C,S	F,I	F,I	F	F	F	
Scirpus spp	F,C,I	F,C	F,C,N	F	F	F	F

F = Food; I = Shelters Invertebrates; C = Cover; S = Spawning; N = Nesting

East End of FE3

Looking Towards End of FE3

RECOMMENDATIONS FOR FE3

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove fallen trees along the shoreline nor logs in the water.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain snag/cavity trees for nesting.
(6) Maintain or increase wildlife corridor.
(7) Install nest boxes.
(8) Protect and, if possible, enhance emergent vegetation for habitat and shoreline protection.
(9) Removal of submergent vegetation for navigation purposes only.
(10) Seasonal control of Curly-Leaf Pondweed and, if necessary, of Eurasian Watermilfoil, using controls selective for exotics.
(11) Minimize aquatic plant and shore plant removal to maximum 30' wide access/viewing corridor. Leave as much vegetation as possible to protect water quality and habitat.
(12) Use forestry best management practices.
(13) Consider purchase of conservation easement to prevent future development of this area.
(14) No use of lawn products.
(15) No bank grading or grading of adjacent land.
(16) No pier construction or other activity except by permit using a case-by-case evaluation.
(17) No installation of pea gravel or sand blankets.
(18) No bank restoration unless the erosion index scores moderate or high.
(19) If the erosion index does score moderate or high, bank restoration only using biologs or similar bioengineering, with no use of riprap or retaining walls, and must include a stormwater management component.
(20) Placement of swimming rafts or other recreational floating devices only by permit.
(21) Maintain buffer of shoreline vegetation.
(22) Maintain aquatic vegetation in undisturbed condition for wildlife habitat, fish use and water quality protection.
(23) Post landing with exotic species alert and educational signs to prevent introduction and/or spread of exotic species.
(24) Maintain no-motor designation of lake